

NON-PUBLIC?: N
ACCESSION #: 9103180005
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Indian Point Unit No. 2 PAGE: 1 OF 05

DOCKET NUMBER: 05000247

TITLE: RPS Low Pressurizer Pressure Logic Actuation
EVENT DATE: 01/07/91 LER #: 91-001-01 REPORT DATE: 03/05/91

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 096

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Claude Peart, Senior Engineer TELEPHONE: (914) 526-5190

COMPONENT FAILURE DESCRIPTION:
CAUSE: B SYSTEM: IB COMPONENT: XI MANUFACTURER:
X BA BKR W120
REPORTABLE NPRDS: N
N

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On January 7, 1991 at approximately 11:02 a.m., with the unit operating at 96.5% power, the reactor tripped. The trip was generated by the reactor protection system (RPS) two out of four coincidence logic for a low pressurizer pressure. The low pressurizer Pressure logic actuation occurred as a result of maintenance activity on pressurizer pressure transmitter PT 455. The operators responded to the event in accordance with established plant procedures and the plant systems responded as designed, with the exception of auxiliary feedwater pump No. 21. This pump started and tripped after running for approximately 120 seconds. Consequently, at 11:05 a.m., the plant entered a 72 hour limiting condition of operation (LCO) as required by Technical Specification 3.4.B(1)(a). Also during the event, the isolation of the chemical volume control system normal letdown occurred and the bank "C" rod "L3" bottom light did not illuminate as required by design.

The plant achieved hot shutdown at approximately 11:30 a.m. and restart was subsequently initiated with the generator breakers closed on the grid on January 8, 1991 at approximately 8:36 p.m. No NRC limit was exceeded. Likewise there was no impact on public health and safety.

END OF ABSTRACT

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PLANT AND SYSTEM IDENTIFICATION:

Westinghouse 4-Loop Pressurized Water Reactor

IDENTIFICATION OF OCCURRENCE:

Inadvertent Low Pressurizer Pressure Logic Actuation initiating a reactor trip.

EVENT DATE:

January 7, 1991

REPORT DUE DATE:

February 5, 1991

REFERENCES:

Significant Event Reports (SOR) 91-13, 91-14

PAST SIMILAR OCCURRENCE:

None

DESCRIPTION OF OCCURRENCE:

On January 7, 1991 at 11:02 a.m., with the unit operating at 96.5% power, the reactor tripped. Earlier that morning, at approximately 10:58 a.m., a containment entry was made by plant personnel to repair a leak in a compression fitting in the sensing line of pressurizer pressure transmitter PT 455. This sensing line is common to another redundant pressurizer pressure transmitter, PT 474. The repair team, subsequent to communicating with the control room operators, proceeded to effect this repair by manually closing the isolation valve (537 X B2) for PT 455. After the repair was completed the repair team began restoring PT 455 to

service by slowly re-opening its isolation valve. This effort caused a momentary depressurization in the common sensing line, ultimately causing a low pressurizer pressure value in pressurizer pressure transmitter PT 474. With both PT 474 and PT 455 reading low, the necessary two out of four reactor protection system (RPS) logic for a low pressurizer pressure reactor trip was satisfied and the reactor tripped, consistent with design.

As required, the plant operators immediately entered emergency operating procedure E-0 "Reactor Trip or Safety Injection" and began to effect the shutdown of the reactor.

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DESCRIPTION OF OCCURRENCE: (continued)

Subsequent to the trip, and as is normal for this type of transient, the steam generators narrow range level instrumentation indicated a dramatic decrease in secondary side fluid level (the shrink effect of a trip). At a level of 8%, a signal to the auxiliary feedwater pumps (AFWP) to start is generated. This occurred at approximately 6.5 seconds after the reactor trip signal. Both motor driven AFWP No. 21 and 23 started and commenced feedwater injection at approximately 11:02 a.m. At approximately 11:04 a.m., AFWP No. 21 tripped and feedwater flow to steam generators (SG) No. 21 and 22 was lost. While reviewing the requirement of step 3(d) of emergency operating procedure ES-0.1 "Reactor Trip Response," one manual attempt to start AFWP No. 21 was made by the operators, subsequent to which the pump was declared inoperable. Consequently, at approximately 11:05 a.m., the plant entered a 72 hour limiting condition of operation (LCO) as stipulated by Technical Specification 3.4.B(1)(a). Feedwater flow was re-established to SGs No. 21 and 22 at approximately 11:06 a.m. via the steam driven AFWP No. 22 and the LCO was subsequently terminated at approximately 06:46 p.m.

The immediate determination of the cause for the AFWP No. 21 trip was determined to be overcurrent, as reflected by the pump breaker indicators. Further investigation found no mechanical or electrical problem with AFWP No. 21 or its motor. The overcurrent trip setting of the overcurrent trip device (Amptector long delay pickup) was checked and discovered to have an improper setting. This as found Amptector setting resulted in a decrease in the current setpoint from approximately 725 Amperes to 540 amperes (.9 x rated current of 600 amperes versus 1.25 x rated current). 540 amperes is very close to the expected current when the pump is delivering rated flow (approximately 400 gpm). Subsequent analysis of pump test data indicated that the pump's motor current is approximately 530 amperes when it is delivering 403 gpm. Therefore, the

trip of AFWP No. 21 was attributed to the incorrect long delay pickup amptector setting. It was observed that the setpoint could be inadvertently moved if, in the process of breaker handling, plant personnel were to touch the amptector setpoint adjustment wheel.

In regards to the failure of AFWP No. 21 to manually start on demand, the operators were unaware that the pump had previously started and tripped, as indicated during subsequent analysis of computer data. Specific breaker contacts provide pump status indication in the control room. One of these contacts causes the amber breaker "mismatch" light to be energized in the control room. This light, when seen in combination with the green "breaker open" light in the control room,

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DESCRIPTION OF OCCURRENCE: (continued)

would indicate a "trip" condition of the pump breaker. Due to a fault in the AFWP No. 21 breaker "mismatch" contact, the amber light was not energized in the control room. With only the green breaker "open" light energized, the operators believed AFWP No. 21 did not automatically start as required, and proceeded to manually start the pump from the control room during the recovery process.

Consequently, the reason for the failure of AFWP No. 21 to start when given a manual start signal from the control room is therefore attributed to the fact that the pump's circuit breaker, as required following a trip, was not first reset by the operators. This was not done for the reasons discussed previously. The pump breaker was subsequently replaced.

The Chemical Volume

and Control System (CVCS) normal letdown isolation occurred because the controlling pressurizer level instrument channel (LT 460) went below the 18% letdown isolation pressurizer level setpoint. It was later observed that this channel value deviated considerably from the other two channel values which were indicating above 20% of pressurizer level at the same time. Data analysis further revealed all channel readings converged approximately 400 seconds later. This appears to indicate instrument recalibration may be necessary. An operational check on instrument channel LT 460 was subsequently performed by Instrument and Control personnel with no identified deficiency. These pressurizer level channels are scheduled to be calibrated during the upcoming refueling outage (February, 1991).

The bank "C" rod "L3" control rod bottom light in the control room did

not illuminate. This was immediately attributed to a blown bulb. The defective bulb was subsequently replaced.

Later in the day, the AFWP No. 21 was successfully tested in accordance with approved plant procedures. The pump's circuit breaker was replaced and also tested in accordance with approved plant test procedure and returned to service. Having verified, the operability of AFWP No. 21 and its circuit breaker, and having corrected the incorrect amptector long delay pickup setting, plant restart was initiated and the generator breakers were closed on the grid on January 8, at approximately 08:36 p.m.

ANALYSIS OF OCCURRENCE:

This report is being made since actuation of the reactor protection system (RPS) occurred. Any manual or automatic actuation of the RPS is reportable under 10 CFR 50.73(a)(2)(iv). There were no adverse safety implications for this event. All systems performed as expected with the exception of the components mentioned previously. Equipment design envelopes were not exceeded and identified deficiencies were corrected.

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CAUSE OF OCCURRENCE:

The reactor trip occurred as a result of a momentary depressurization of pressurizer pressure transmitter PT 474 while another pressurizer pressure transmitter PT 455, on a common sensing line, was being valved back in service. Our review of industry experience, prior to this event, did not reveal the phenomena specifically encountered in this instance.

In regard to the response of AFWP No. 21 to this event it appears that inadvertent instrument setpoint adjustment occurred.

The CVCS normal letdown isolation occurred, as noted previously, as a result of the controlling pressurizer level instrument channel sensing a pressurizer pressure level below 18%, which is the value for CVCS normal letdown isolation. The isolation occurred at the correct time and setpoint value. However, the readings for all channels over time indicate recalibration may be necessary.

The cause for bank "C" rod "L3" control rod bottom light in the Control Room not illuminating was immediately attributed to a blown bulb which was replaced.

CORRECTIVE ACTION:

- 1) Engineering was requested to evaluate and implement a method to prevent inadvertent amptector setting adjustment by the end of the February, 1991 refueling outage.
- 2) Calibrate pressurizer level instruments during the February 1991 refueling outage.
- 3) The breaker for AFWP No. 21 was replaced with a spare unit, and subsequently tested in accordance with approved plant procedures.
- 4) The blown bang "C" rod "L3" control rod bottom light in the control room was replaced.
- 5) For pressurizer pressure transmitters PT 455 and PT 474, provide enhanced guidance and policy for instrument maintenance that will preclude the possibility of a similar event. Additionally, an engineered solution for the momentary depressurization of these transmitters, is also being evaluated.

ATTACHMENT 1 TO 9103180005 PAGE 1 OF 1

Stephen B. Bram
Vice President

Consolidated Edison Company of New York, Inc.
Indian Point Station
Broadway & Bleakley Avenue
Buchanan, NY 10511 March 5, 1991
Telephone (914) 737-8116

Re: Indian Point Unit No. 2
Docket No. 50-247
LER 91-01-01

Document Control Desk
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

The attached Licensee Event Report LER 91-01-01 is hereby submitted in accordance with the requirements of 10 CFR 50.73. This is a supplement to previously issued LER 91-01 dated February 5, 1991.

Very truly yours,

Attachment

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Regional Administrator - Region I
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